

ABSTRACT OF THE DISCLOSURE

An optical semiconductor device to increase optical communication speed has a silicon substrate with an etched V-shaped first groove portion, a light emitting element which has an optical axis in the direction of the first groove portion and is mounted to the upper surface of the silicon substrate, and a high NA aspheric lens is mounted in the first groove portion. The first groove portion is composed of first and second opposing inclined surfaces and a third inclined surface perpendicular to the first and second inclined surfaces. A slit is cut in the silicon substrate extends in a direction perpendicular to the direction of the first groove portion and includes the first, second, and third inclined surfaces. The aspheric lens is mounted to the first and second inclined surfaces and has a part thereof protruding in the slit.